A MODEL FOR COST-BENEFIT ANALYSIS OF FUNDS EXPENDED BY THE STATE OF FLORIDA FOR SELECTED COMMUNITY COLLEGE PROGRAMS

BY

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A DISSERTATION PRESENTED
TO THE GRADUATE COUNCIL OF THE UNIVERSITY OF FLORIDA
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF EDUCATION

UNIVERSITY OF FLORIDA

1982

This dissertation is dedicated to my wife, Ellen, and three daughters, Carol, Kathy, and Robbin, for their understanding, love, support, and patience with the writer during the many months of study and writing.

ACKNOWLEDGEMENTS

The author extends acknowledgement to many individuals who were very helpful during his study in the doctoral program. Special gratitude is extended to the doctoral committee, Dr. James L. Wattenbarger, Dr. John M. Nickens, and Dr. Harold C. Riker, for their support and suggestions during the study.

Sincere thanks is extended to Dr. Milton O. Jones for his encouragement to enter the doctoral program as well as his moral support during the studies, and to Mrs. Betty Broome for reviewing and typing the manuscript.

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Abstract of Dissertation Presented to the Graduate Council of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

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August, 1982

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The problem of the study was to develop a model to determine the period of time it takes the State of Florida to recover the funds expended for each student's education in selected programs in the community college system. Two programs were used in the development of the model, but all community colleges offering those programs were included.

Costs for each program were determined and analyzed. After the ranges, means, and standard deviations were computed, an FTE (Full-Time Equivalent) cost was calculated to use as a basis for the model.

The actual income of graduates reported to the Florida Department of Commerce on a quarterly basis was used. The minimum wage was the control for the model; therefore, only earnings above that level were considered. The quarterly earnings were taken at six different points during the three

years the incomes were reported. Three years after graduation, approximately 65 per cent of the graduates were employed.

Taxes were computed by taking a percentage of the income as estimated by the Florida Department of Education. Only the taxes paid on the earnings above the minimum wage were used in the development of the model. Those taxes were then projected on a straight line progression to determine at what point the taxes on earnings above the minimum wage would exceed the cost of the student's education to the state.

The results of the study were based solely on the income reported. It was determined that it would take approximately 20 and 25 years for students to repay in taxes what had been spent for the cost of the trade and industrial and health related programs respectively.

CHAPTER I
INTRODUCTION

Nature of the Study

"As society has increased investments in education, the public has exhibited a growing demand for schools to be accountable" (Webb, 1976, p. 9). In other words, the society is now requiring educational institutions to present some hard data in terms of economic figures to show that the educational process is worthwhile. Educators have justified the educational process in non-quantifiable terms for many years and non-quantifiable justifications were acceptable for a long period of time. For all those years people simply accepted the idea that education in itself was a worthwhile venture.

Today, many agencies that were not in existence years ago or had very low budgets (such as welfare, unemployment, and prisons) are now competing with education for the same funds that education needs. The new agencies that have been created are now questioning the continued practice of allocating large amounts of state and local funds to educational institutions.

Many of the non-educational agencies have adopted methods of justifying their need for additional funds by using economic data as support. Those agencies have compared the

cost of providing their function to the benefits that result from those functions. Because of the fact that many other agencies are using economic data to support their claims for more funds, Webb (1976) asserts that "Extended discussion of the social value of education is no longer acceptable" (p. 209).

Educational administrators, as do most other administrators, fear the outcome of economic studies will be unfavorable (Barsby, 1972). Barsby (1972) stated further that administrators first attack the methodology of the research attempting to cast doubt on the results. But Webb (1976) felt that "Educators think of cost-benefit as identifying 'least cost' programs, and maybe it does, but that is a limited view" (p. 222). Webb went on to say that

> The real value of cost-benefit analysis lies in its objective of maximizing efficiency and effectiveness and providing decision makers with a procedure for making rational choices among alternatives when resources are a constraint. The use of cost-benefit analysis would compel the educators to think through objectives, to concentrate on costs as well as objectives, and to think in terms of alternatives. (Webb, 1976, p. 223)

Educational administrators are quite concerned about the system that uses only quantifiable returns as a yardstick for future funding. Some researchers feel that those administrators may not have as much need to be concerned about cost-benefit studies as they seem to think. According to Handa and Skolnik (1975) administrators do not have much to fear because the information gathered in cost-benefit

studies is seldom used for decision making purposes. They stated

> It is then suggested that economic studies, insofar as they have in the past decade concentrated on the importance of rate-of-return analysis, have not contributed much to guide public policy decision making. Not only have the decisions been made ignoring this economic criteria; but, it is argued, the criterion by itself is inadequate and misleading as a basis for public policy. (p. 1)

This study is a model for cost-benefit analysis of educational programs using some of the graduates of selected community/junior colleges in the State of Florida. "A cost-benefit analysis indicates whether the value of the outputs of a program exceeds the value of the inputs; and if so, by how much" (Barsby, 1972, p. 7).

If educational administrators understood the ratio of costs of programs to the benefits derived from those same programs, that information could form a base to argue for continued funding. Educators cannot ignore the economic side of education any longer, but it has to be pointed out that economics alone does not tell the whole story of the value of education.

Statement of the Problem

The purpose of this study was to develop a model to determine the length of time necessary to recover through state and local taxes the funds expended for students' education in selected programs in the community college system.

Specifically, the problem in this research was to answer the following questions in developing the model:

1. What portion of the income earned above the minimum wage resulted in the payment of increased state and local taxes?
2. What period of time was required for the state to recover the funds expended for the students' education?

Delimitations

In making the study the delimitations were

1. A small sample of students was used to determine if the model would work.
2. Data for six quarters of income were used.
   Quarter 1 = the 4th quarter of 1975
   Quarter 2 = the 1st quarter of 1976
   Quarter 3 = the 4th quarter of 1976
   Quarter 4 = the 1st quarter of 1977
   Quarter 5 = the 4th quarter of 1977
   Quarter 6 = the 1st quarter of 1978
3. Only students employed during the six quarters listed in delimitation number two were utilized. (Those who were not employed were not included.)
4. The minimum wage was used as an average income for high school graduates and actual income was used for community/junior college graduates.

5. The tax estimated to be paid from each dollar earned by each employed person by the Florida Department of Education were used.
6. Total taxes paid were included; therefore, those taxes that apply directly to education only were not determined.

Limitations

This investigation was limited by the following factors:

1. The conclusions were applicable only to the group utilized in this study.
2. Graduates who were employed in another locality other than Florida were not included.
3. The income used did not take into consideration possible job promotions, job changes that include increased or decreased income or changes in salary scales.
4. The costs of educating the student in the year of graduation were utilized as the costs for each of the two years of education.

Assumptions

The assumptions made in this research were

1. It was assumed that labor contracts remained constant.
2. It was assumed that the program completer was employed in the position at the salary earned

because of the college education received.

3. It was assumed that the tax estimated by the Florida Department of Education was correct.
4. It was assumed that each student was enrolled in a two year program.
5. It was assumed that persons employed at the minimum wage were not graduates of post-secondary programs.

Justification for the Study

In an age when it appears that the general mood of society is to demand accountability for funds, one tool to indicate that accountability is a cost-benefit study. Whenever an attempt is made to help someone to understand a process unfamiliar to them, and understanding of the process is of paramount importance, the explanation must be made so that all interested persons will understand and the explanation must be in layman terms. Better than anything else, this society understands dollars and cents. Therefore, for education to plead its case in the State of Florida, an attempt must be made to determine the economic relationship between education and increased income, and therefore, increased taxes paid.

The best way to indicate to society the value of education is to perform a cost-benefit analysis.

> An important advantage of a cost-benefit study is that it forces those responsible to quantify costs and benefits as far as possible rather than rest content with vague qualitative judgments or personal hunches. (Prest and Turvey, 1975, p. 730)

Webb (1976) concluded that it is unlikely that the indirect benefits of education (reduction in crime, taxpayers at a higher level, less dependence on social programs, increase in personal worth, to name just a few) will exceed the direct benefits from an economic standpoint. Hence, the nearer the direct economic benefits come to equaling the costs, the easier it is to explain how the unquantifiable benefits added make it worthwhile. What cost-benefit analysis does most is indicate the efficiency in the programs offered as opposed to utilizing the funds for some other purpose.

When studying public institutions "it is not the income of the graduate that constitutes the selling price, . . . it is the income back to the taxpayers . . . (i.e.) it is the taxes they pay that must be compared to the unit cost" (Webb, 1974, p. 36). Thus this research used the taxes paid as a basis for making the analysis.

Definition of Terms

Average cost is the total cost of educational or other programs divided by the number of recipients of that program.

Benefit is the amount received in return subtracting the cost invested, or the advantage gained as a result of funds invested.

Community college is a college offering a course of study two years beyond the high school level. It offers either the first two years of a standard four year college

degree or terminal study programs in various fields with a certificate or diploma awarded at the completion of the program.

Control group is the group that has all of the same variable factors as the experimental group with the exception of one factor.

Cost is the total amount of funds invested into a program including salaries, capital investments, fringe benefits, utilities and other costs.

Cost-benefit analysis is a procedure for determining how much it costs to achieve stated objectives and comparing this cost with the value (benefits) of the results achieved (Griffith, 1974, p. 81).

Cost-effectiveness analysis is the search for the least-cost method of achieving any specified result. Comparing several different programs that serve the same group is one way (Mangum, 1969).

Discount rate is used to compute the future income in such a way that it reflects the fact that future dollars have less value than the value of the same dollars in the present.

Economic efficiency is the ability to reach goals with a minimum of expense or waste. It is achieved when the value of what is produced by any set of resources exceeds by as much as possible the value of the resources used.

Educational program is a course of study which has as its main objective preparing the student to perform specific tasks after the completion of the components of the program.

Experimental group is that group that has the same variables as the control group with the exception of the one factor that is being tested for its effect.

Marginal cost indicates how much the total cost of an activity will change when the level of activity is changed by some small amount (Barsby, 1972).

Model is a standard or example for imitation or comparison (Stein, 1979, p. 857).

Noneconomic benefits are those benefits that may exist that do not lend themselves to quantification. Those benefits do not have a monetary tag and cannot be given a value without a tremendous amount of guessing, if at all.

Present-time is that time at which the program is completed. It is the cost of the program at that time that is utilized as a base to establish discount rates that will be used to eliminate the less valuable dollar of the future.

Rate-of-return is calculated by finding the interest rate that will equalize the present costs and benefits.

Vacuum effect attempts to account for the number of jobs available to the unemployed because the students who are in college are not in the job market competing for them.

Procedures

The state funding formula required by the Florida State Division of Community Colleges was used to develop the funding level of the community colleges. The average of the funding levels developed by each of the community colleges was used to establish the cost of education for the two

programs included in the study which were Trade and Industrial and Health Related. The cost reported in the 1975-76 academic year was utilized as the present-time cost. The figure developed from that cost was doubled to account for the state's total investment for each student over a two year period.

The writer realizes, however, that the cost of programs differs from year to year and that average cost does not give an absolute indication of the true cost for each student. A realization is also noted that many students do not complete the program in which they enroll in two academic years. The average hours of enrollment per student has been on a slow but continuous decline over the past several years. Fewer and fewer students are now completing a two year program in two years. Therefore, a number of students included in this study may have taken several years to complete their program.

Information from the Florida State Department of Commerce was utilized to determine the income levels of the students reported in this study. Only those students who were employed in the State of Florida with information reported to the Department of Commerce were included. Those students who continued their education while being employed full-time were reported (using earning exceeding what could be earned at a minimum wage for 40 hours of work as the basis for determining full-time employment). Those students unemployed or working less than full-time were not reported.

It was assumed that all students employed full-time would continue to be employed full-time and receive a modest

increase of five percent per year using a linear projection. Although the inflation rate is quite high at the present time, projections were made over a thirty year period and five percent is assumed to be a conservative figure. No other changes such as promotions, job-upgrading, changes of jobs at increased or decreased wages were included or anticipated. It was also assumed that all employed graduates would remain employed.

The cost of the education was taken and compared to the taxes paid by the graduates. Only the taxes that exceeded those taxes paid by the average high school graduate were used to determine the rate-of-return for the state over a ten, twenty, and thirty year period.

Summary

This chapter was used to outline the entire process to be used in developing the model. Chapter II summarized related literature on cost-benefit analysis, Chapter III was the development of the model, and Chapter IV was a summary and recommendations for further study.

CHAPTER II
SUMMARY OF RELATED LITERATURE

Overview of Cost-Benefit Analysis

The first use of cost-benefit analysis in the United States was in the 1930's in water resource development. The Flood Control Act in 1936 was a key document in the development of the use of cost-benefit analysis, because it required, in part, that "the benefits to whomever they accrue (be) in excess of the estimated cost" (Holleman, 1975, pp. 8-9). Since that time more and more agencies, both public and private, have seen a need and are utilizing cost-benefit analysis or other similar methods to determine the value of their programs.

Cost-Benefit Analysis Defined

Numerous people have attempted to define cost-benefit analysis in layman terms so that their definition would be understood by any reader. However, the definitions indicate that the ultimate product of the process of cost-benefit analysis should be that the investment should be exceeded by the end product. For example, Mangum defined cost-benefit analysis as "the process of determining whether a given program is worth more than it costs, however worth may be defined" (1969, p. 1174). On the other hand, Barsby defined cost-benefit analysis as a way to determine "whether the

value of the outputs of a program exceeds the value of the inputs; and if so, by how much" (1972, p. 7). Prest and Turvey defined it as

> A practical way of assessing the desirability of projects, where it is important to take a long view (in the sense of looking at repercussions in the distant as well as the near future) and a wide view (in the sense of allowing the consideration of side effects of many kinds on many persons, industries, and regions). (1975, p. 683)

Lastly, cost-benefit analysis is defined as "a procedure for determining how much it costs to achieve stated objectives and comparing this cost with the value (benefits) of the results achieved" (Griffith, 1974, p. 81).

All of those definitions imply that the end result should indicate that the economic value of an investment should be less than the economic output which results from that investment. That line of thinking may be true for educational programs. The fact that it is very difficult to quantify all the results of an educational program is possibly the reason that many education administrators attempt to disregard the results of studies done using cost-benefit analysis. Many feel that all of the values of education cannot be measured in dollars and cents.

Cost-Benefit Analysis and Education

Cost-benefit analysis may be used in many ways, but the way it is sometimes used is as a decision making tool. It will, if carried out correctly, indicate the worth of a program in terms of the cost of that program. The need now for making decisions about how tax dollars will be spent is

much greater than at any time in the past. Approximately forty (40) years ago, there were very few state programs competing for the tax dollars with education. However, since the time of the great depression and the advent of the "New Deal" with its social programs and the investment of the federal government tax dollars into education, the competition for state and local tax dollars has changed dramatically. Today there are many other agencies competing with education for very limited funds. Therefore, legislators as well as administrators have to make decisions about how to divide the funds available.

More and more decision makers are looking at the results or outcome from programs to determine where tax dollars can best be spent. Many education administrators first attack the methodology of the research, attempting to cast doubts on the results as a way to defend their program against the findings of cost-benefit studies, according to Peter Rossi (Barsby, 1972). It may be the ideas stated by Prest and Turvey, that have most educational administrators concerned. They stated,

> Cost-benefit analysis is not aimed at answering the question of whether society should invest in education, but of whether from an economic standpoint, society should invest more or less in education relative to alternative benefits. (1975, p. 683)

It is investing less, that is the problem that many educational administrators feel. Some agree that the non-economic benefits of education may be as important as the economic benefits. Barsby indicates that some of the

non-economic benefits that cannot be measured by cost-benefit analysis are

1. The consumption value from training and education (Many people simply enjoy participating in the process.),
2. The benefits society may receive from its citizens participating more in public affairs,
3. The individual's satisfaction in being successful in his (or her) chosen vocation,
4. The value of options to the trainee of further education and training made possible by participating in one program, and
5. The value of redistributing income in a more "equitable" manner.

In spite of the non-economic benefits that may be derived from education, Webb asserts that

> The real value of cost-benefit analysis lies in its objective of maximizing efficiency and effectiveness and providing decision makers with a procedure for making rational choices among alternatives when resources are a constraint. (1976, p. 211)

Although there are many different ideas of how the results of cost-benefit studies should be used, there seems to be sufficient arguments that when it comes to education the results should not be used to make major decisions. Handa and Skolnik postulate that,

> Economic studies, insofar as they have for the past decade concentrated on the importance of rate-of-return analysis, have not contributed much to guide public policy decision making. Not only have the decisions been made ignoring this economic criterion; but, it is argued,

> the criterion by itself is inadequate and misleading as a basis for public policy. (1975, p. 1)

They further state that,

> The rate of return may be a useful tool for purposes of ex-post measurement but it has very limited usefulness as a tool for making decisions about the amount of public money which should be spent of different kinds of educational services. (p. 10)

Other writers seem to support Handa and Skolnik's belief that cost-benefit studies should not be used in a vacuum to make decisions. Barsby stated that "most researchers would not advocate altering the activities of a program or changing its priorities on the basis of a cost-benefit ratio alone" (1972, p. 22). Barsby also quotes Peter Rossi as stating "that the only programs he knows of that were ended because of poor evaluation results were those in which the evaluation was used as an excuse for a decision already made" (1972, p. 7).

Morris and Ammentorp have asserted that,

> The competition for alternative uses of resources, particularly in the declining enrollment environment of education, enhances the importance of policy analysis together with assessment of costs and benefits of proposed programs and action. (1977, p. 64)

Some important discoveries have been made concerning the length of education. Hansen and Weisbrod found that,

> State and local governments suffer losses with their investment in education . . . with the exception of the cheapest option the two year (community) junior college and two years at a state college. The federal government with its higher tax rates was the only government to gain. (1969, p. 91)

In other words, those authors felt the longer the educational training the higher the investment; and therefore, it lessens the chance that state and local governments would regain their investment into education. In the same vein, other research shows that, to some extent, longer educational programs proved to be less profitable from a purely economic standpoint. Hardin and Borus felt that, ". . . the longer the course the less profitable it was for the trainee and the government. There is an inverse relationship between duration of course and gained benefits" (1971, pp. 91-92).

Of course, there are direct economic benefits that are derived from educational programs. Webb stated that, "It is unlikely that the indirect benefits of education exceed the direct benefits from an economic standpoint" (1976, p. 211). Webb went on to list those economic benefits that she felt were justifiably quantified. They were an increase in national income, an increase in tax revenue generated, and reduction in welfare or social services and crime. It is readily provable through statistics that the higher the educational level attained by individuals, the less likely they are to commit crimes. At the very least, these statistics show that fewer college educated people actually go to prison. Morris Webb, Senior Vice President of Texas State Technical Institute at Waco, asserted that,

> In a public institution it is not the income of the graduate that constitutes the selling price, . . . it is the income back to the taxpayers, . . . it is the taxes they pay that must be compared to the unit cost. (1974, p. 36)

Questionable Dependability of Cost-Benefit Studies

Cost-benefit analysis, if used correctly, can provide a great deal of valuable information that can be used in conjunction with other data to make decisions. Barsby pointed out the fact that "Cost-benefit analysis has the potential for increasing the efficiency of resources" (1972, p. 7). It only deals with purely economic values which are a major concern but not the only concern. The main limitations of cost-benefit analysis are

1. It concerns only one of many possible social goals-allocative efficiency.
2. It leaves serious conceptual problems such as
   A. The relationship between earnings and marginal productivity
   B. The consumption benefit of education
   C. Externalities
   D. Monetary returns to investments in education
   E. Effects on earning capacity other than education
   F. Separation of research from teaching cost in higher education. (Handa and Skolnik, 1975, pp. 1-2)

Stated another way, cost-benefit analysis does not include many non-direct economic benefits or unmeasured economic benefits. It does not include

1. (The) benefit to society in reduction of crime
2. (The) increased productivity because of improved health
3. (The) increased earnings of children (the intergenerational effect)
4. (The) increased non-wage job benefits
5. (The) increased productivity of other resources. (Barsby, 1972, p. 19)

Barsby further illustrated his view by postulating that:

1. Society benefits from a program to the extent that total income is increased.

2. The government does not gain the full benefits from increased earnings, but only the increases in tax revenues stimulated by increased earnings.
3. Society benefits to the extent that fewer resources have to be utilized in administration of government transfer payment programs.
4. In government programs, the normal situation would be for the government and society to bear more program costs than the individual; and for society to capture more gains than either the individual or the government. (1972, p. 8)

While cost-benefit analysis may be an important tool to use in determining the value of one program as it relates to others, it should not be used to make unilateral decisions about education or any other service type institutions. The very basis of a democratic government is dependent on an educated public making informal decisions about those who represent them. Very early in the development of the republican form of government, this country's leaders recognized the need for a strong educational program and that recognition and support has endured continuously.

Bobbitt indicates that there is a problem for economists attempting to develop completely accurate results from cost-benefit studies. She states

> There is a strong temptation for economists to come up with precise quantitative results. . . . Until such time as more reliable methods evolve to quantify spillovers, the best the economist can do is reveal clearly the area of ignorance. After measuring all that can be measured empirically, the economist can provide a description of the spillovers and give some idea of their significance. (1978, p. 60)

Today, in the very unstable economic conditions, educators will need to prepare better to ward off the desires of

some to reduce funding for public institutions or prevent growth. Educational institutions will need to reorient their goals to meet the demands of an ever increasing dependency of a society on technology. More and more high school graduates are opting not to get four (4) year college degrees but to get specific training. These young men and women are striving to become members of the work force as quickly as possible after high school graduation. They want training programs that will prepare them in one year or less to become productive citizens.

The number of high school graduates who are going on to college is increasing each year, but those pursuing liberal arts degrees are not increasing as fast. The educational administrators need to develop programs to meet the needs as are presently seen, but at the same time, plan for the future. It is the programs of short duration that many people are looking for today and those programs will improve the benefit-cost ratio. It was earlier stated that the longer the program, the less profitable it is to both the student and government.

In short, many different ways will have to be developed to measure the true benefit of education. More quantifiable data must be gathered to support the need for continuing funding for education at and above the level it is presently.

CHAPTER III
DEVELOPMENT OF THE MODEL

In order to compute the cost and benefits of the programs included in this study, it was necessary to gather all of the data to determine the costs of the program as well as that needed to determine the benefits. The costs of the programs were taken from data formulated by the Division of Community Colleges (DCC) in its annual report for the year 1975-76. The benefit data were taken from the incomes reported to the Florida Department of Commerce.

Developing the model required four major steps. The first step involved determining the overall cost to the state for each of the programs used in the study. That figure was developed by taking the cost for each community college program and reducing it to a per student cost for each year. The yearly figure was then doubled to establish the two year program costs.

Secondly, the income of the students who graduated was analyzed. The income was taken from quarterly reports from the Florida Department of Commerce. The incomes were analyzed and the earnings above the minimum wage for each quarter were determined. All of the income above the minimum wage was averaged in order to make the figures easier to use in the model development.

The third step in developing the model was to determine the amount of taxes to be paid from the salary earned above the minimum wage. The total salary above the minimum wage was averaged in order to determine at what point the state recovered the funds expended for the education of each student.

The last step in developing the model was the projection of the amount of taxes paid over a period of years to determine at what point the students would repay the funds expended by the state. The projection was made over a 30 year period.

Program Costs

The first step in developing the model was to determine student program cost.

Students finishing two programs during the 1975-76 school year were used in this model. Since only a model was developed and information on income from the Health Related Programs and Trade and Industrial Programs was available, the cost for those two programs were taken from the DCC report. The costs for the programs were reported to the DCC by each 30 hours of student enrollment or full-time equivalent (FTE) students and were divided into instructional costs, related instructional costs, and administrative costs.

Health Related Programs

All 28 community colleges reported costs for health related programs. The costs of the programs ranged from a low of $1,072.90 per FTE to a high of $2,582.10 per FTE.

FTE costs, rather than per student cost, were used. However, when the assumption is made that each student completed the program in two years, that two year assumption would automatically require students to take the equivalence of one full FTE each year if each program was at least 60 semester hours in duration.

Each community college reported its cost per FTE by disclosing its direct instructional costs, related instructional costs, and collegewide or administrative costs involved. Each college necessarily had varying costs because the costs involved salaries and other benefits for instructors which vary within each college as well as among colleges. Secondly, the report included material and supply costs directly relating to the instruction and equipment needed to operate the programs. Thirdly, administrative costs were included and they varied, depending on the salaries and benefits of the administrator(s), the administrative organization, and the number of administrators and support administrative staff involved. All of these costs for health programs are reflected in the table that follows.

In Table 1, the gross cost for the three categories are reflected. The major reason for the large standard deviations is the range of costs in each category.

Table 1
Health Related Programs
Gross Cost
(1975-76)

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost	No. FTE
Brevard CC	237,428	94,336	141,504	473,268	230.2
Broward CC	583,689	197,650	354,012	1,135,351	523.3
Central Fla. CC	127,989	30,887	81,040	239,916	142.4
Chipola JC	41,572	7,087	52,385	101,044	71.8
Daytona Beach CC	470,494	113,246	279,187	862,927	545.5
Edison CC	94,275	28,032	80,129	202,436	108.4
Fla. JC at Jax.	697,625	224,316	417,933	1,339,874	668.8
Florida Keys CC	43,045	19,163	49,769	111,977	48.1
Gulf Coast CC	102,951	20,489	56,181	179,619	94.2
Hillsborough CC	440,463	199,825	334,720	975,008	441.7
Indian River CC	141,078	72,817	224,391	438,286	271.2
Lake City CC	75,905	13,071	63,096	152,072	109.2
Lake-Sumter CC	2,894	879	4,228	8,001	5.8

Table 1--continued

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost	No. FTE
Manatee CC	198,402	60,010	150,223	408,635	220.3
Miami-Dade CC	1,710,747	477,965	1,343.318	3,532,030	1,705.8
North Fla. JC	26,219	5,855	27,402	59,476	34.3
Okaloosa-Walton JC	4,875	1,458	11,047	17,380	16.2
Palm Beach JC	573,778	166,414	268,884	1,009,076	441.3
Pasco-Hernando CC	16,485	4,207	43,188	63,880	47.7
Pensacola JC	679,185	228,717	502,713	1,410,615	774.0
Polk CC	342,457	81,250	259,197	682,904	418.6
St. Johns River CC	1,905	1,062	7,086	10,053	7.8
St. Petersburg CC	618,703	266,150	358,581	1,243,434	608.9
Santa Fe CC	694,530	254,347	365,444	1,314,321	561.1
Seminole CC	79,660	29,524	47,476	156,660	86.1
South Florida JC	23,190	7,650	32,670	63,510	50.0

Table 1--continued

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost	No. FTE
Tallahassee CC	129,085	70,042	65,280	264,407	102.4
Valencia CC	313,515	159,073	249,541	722,129	359.0
Totals	8,472,144	2,835,522	5,870,625	17,178,289	8,694.1
Mean	302,577	101,269	209,665	613,510	
Standard Deviation	370,120	112,663	261,102		

Source: Based on State Division of Community Colleges data. The numbers were rounded to the nearest dollar.

All of the colleges' instructional costs were within one standard deviation of the mean with the exception of Miami-Dade Community College. The mean for all the related instructional cost was $101,269 and the standard deviation $112,663. Again, the range of costs was the primary factor contributing to the large standard deviation. Ten (10) colleges were more than one standard deviation from the mean; however, eight of the ten were within one and one half (1½) standard deviations. Again, Miami-Dade was farther away from the mean. For administrative cost, all institutions were within one standard deviation of the mean with the exception of Miami-Dade.

The average amount spent by category was $302,577 for instructional costs, $101,269 for related instructional costs, and $209,665 for collegewide or administrative costs. Therefore, the average cost per FTE was $1,975.85 for the entire state.

There was also a great deal of variation between institutions for the average of the three costs. The instructional costs ranged from a high of $1,710,746 at Miami-Dade Community College to a low of $1,904 at St. Johns River Community College. The other instructional costs ranged from a high of $477,965 at Miami-Dade Community College to a low of $879 at Lake-Sumter Community College. Likewise, the administrator or collegewide costs varied among the institutions. Miami-Dade Community College was high with a cost of

$1,343,318 and Lake-Sumter Community College was low with an average cost of $4,228.

It is quite unfair to compare cost using gross figures. If average cost per FTE were used, Miami-Dade would not generate the high figure for any category. It produced more than twice as many FTE's as any other school (see Table 2). Just a quick perusal of Table 2 will allow the reader to discover the large number of schools requiring more funds per FTE than Miami-Dade.

Table 2
Health Related Programs
Cost Per FTE
(1975-76)

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost Per FTE	No. FTE
Brevard CC	1,031.40	409.80	614.70	2,055.90	230.2
Broward CC	1,115.40	377.70	676.50	2,169.60	523.3
Central Fla. CC	898.80	216.90	569.10	1,684.80	142.4
Chipola JC	579.00	98.70	729.60	1,407.30	71.8
Daytona Beach CC	862.50	207.60	511.80	1,581.90	545.5
Edison CC	869.70	258.60	739.20	1,867.50	108.4
Fla. JC at Jax.	1,043.10	335.40	624.90	2,003.40	668.8
Florida Keys CC	894.90	398.40	1,034.70	2,328.00	48.1
Gulf Coast CC	1,092.90	217.50	596.40	1,906.80	94.2
Hillsborough CC	997.20	452.40	757.80	2,207.40	441.7
Indian River CC	520.20	268.50	827.40	1,616.10	271.2
Lake City CC	695.10	119.70	577.80	1,392.60	109.2
Lake-Sumter CC	498.90	151.50	729.00	1,379.40	5.8

Table 2--continued

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost Per FTE	No. FTE
Manatee CC	900.60	272.40	681.90	1,854.90	220.3
Miami-Dade CC	1,002.90	280.20	787.50	2,070.60	1,705.8
North Fla. JC	764.40	170.70	798.90	1,734.00	34.3
Okaloosa-Walton JC	300.90	90.00	681.90	1,072.80	16.2
Palm Beach JC	1,300.20	377.10	609.30	2,286.60	441.3
Pasco-Hernando CC	345.60	88.20	905.40	1,339.20	47.7
Pensacola JC	877.50	295.50	649.50	1,822.50	774.0
Polk CC	818.10	194.10	619.20	1,631.40	418.6
St. Johns River CC	244.20	136.20	908.40	1,288.80	7.8
St. Petersburg CC	1,016.10	437.10	588.90	2,042.10	608.9
Santa Fe CC	1,237.80	453.30	651.30	2,342.40	561.1
Seminole CC	925.20	342.90	551.40	1,816.50	86.1
South Florida JC	463.80	153.00	653.40	1,270.20	50.0
Tallahassee CC	1,260.60	684.00	637.50	2,582.10	102.4
Valencia CC	873.30	443.10	695.10	2,011.50	359.0

Source: Based on State Division of Community Colleges data. The numbers were rounded to the nearest dollar.

Trade and Industrial Programs

In Table 3, the gross costs for Trade and Industrial Programs shows that although more FTE were generated by those programs than in the health related programs, less funds were expended to do so. The total spent was approximately 1 million dollars less. While Miami-Dade produced the most FTE in health related programs and had the highest cost in each category, its cost per FTE was not the highest. In trade and industrial programs, Florida Junior College at Jacksonville (FJC) produced the most FTE and, therefore, had the highest gross cost in all categories.

Only 21 of the 28 community colleges participated in trade and industrial programs in 1975-76. The total program cost by institution ranged from $3,339,331 to a low of $3,493. Hence, the categorical costs varied tremendously among the institutions. Florida Junior College at Jacksonville had the high cost in Instructional ($960,888), Related Instructional ($670,654) and Administrative ($1,707,789) and Florida Keys Community College was low with costs of $1,320, $0, and $2,173 respectively. The total cost for trade and industrial programs was $16,127,090 for 11,634.2 FTE. The average cost per FTE for those programs was $1,386.18.

However, when cost per FTE (Table 4) is viewed, it shows that only three (3) colleges had a total cost per FTE which was lower than that at FJC. In fact, FJC did not have an FTE cost that was highest in any of the three categories.

In an effort to establish the average cost per FTE for both the health related and trade and industrial programs, the total cost and FTE for both programs were calculated. By dividing the total cost by the total FTE, the average FTE cost was figured. In order to determine the cost per student or FTE, the average cost was doubled to establish the cost for two years. The cost for a two year program was then calculated. Since each FTE is equal to 30 semester hours and the average full-time student would enroll for 15 hours per semester or 30 hours for the school year, each student was assumed to be the equivalent of one FTE.

Table 3
Trade and Industrial Programs
Gross Cost
(1975-76)

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost	No. FTE
Brevard CC	914,338	427,497	1,076,094	2,417,929	1,750.6
Central Florida CC	340,305	153,604	402,468	896,377	707.2
Chipola JC	205,793	82,548	280,385	568,726	384.3
Daytona Beach CC	593,046	390,964	536,162	1,520,172	1,047.6
Fla. JC at Jax.	960,888	670,654	1,707,789	3,339,331	2,732.9
Florida Keys CC	1,320	0	2,173	3,493	2.1
Hillsborough CC	24,495	18,880	49,939	93,314	65.9
Indian River CC	177,024	71,778	381,431	630,233	461.0
Lake City CC	328,435	89,785	374.299	792,519	647.8
Manatee CC	67,113	37,643	112,582	217,338	165.1
Miami-Dade CC	423,504	67,730	408,713	899,947	519.0
North Florida JC	70,939	54,363	91,394	216,696	114.4
Okaloosa-Walton JC	129,576	45,361	205,388	380,325	301.2

Table 3--continued

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost	No. FTE
Palm Beach JC	31,999	6,713	81,646	120,358	134.0
Pasco-Hernando CC	47,110	1,947	143,325	192,382	158.3
Pensacola JC	313,614	144,598	345,534	803,746	532.0
Polk CC	192,861	40,958	183,779	417,598	296.8
Santa Fe CC	448,051	198,123	379,968	1,026,142	583.4
Seminole JC	258,311	230,826	201,261	690,398	365.0
South Florida JC	104,099	19,094	147,995	271,188	226.5
Valencia CC	180,338	143,322	305,218	628,878	439.1
Totals	5,813,159	2,896,388	7,417,543	16,127,090	11,634.2
Mean	276,816	137,922	353,213	767,958	

Source: Based on State Division of Community Colleges data. The numbers were rounded to the nearest dollar.

The average FTE costs statewide for all institutions were calculated reflecting an FTE cost of $1,386.18 for Trade and Industrial Programs and $1,975.85 for Health Related Programs. Each figure was then doubled to reflect a per student public investment of $2,772.36 in the trade and industrial programs and a $3,951.70 investment in health related programs. The next step was establishing the income of students, and the last two steps were a calculation of the taxes paid on income earned above the minimum wage and projecting those taxes over a 30 year period.

Income of Graduates

The second step in developing the model was to determine the income of the students.

In order to determine the benefits of the health related and trade and industrial programs, the incomes of the graduates had to be calculated. The benefits to be established are the economic benefits and do not take into consideration other non-economic benefits of the educational process. To compute the economic benefits, the income of each graduate reported was analyzed. The incomes of those graduates earning in excess of the minimum wage for the quarterly reports were used. Of the 301 students who graduated and were reported by the Department of Commerce, 165 earned incomes in excess of the minimum wage.

Minimum Wages

The minimum wage was used as the control wage for each year. The minimum wage has experienced a continuous increase in recent years. For example, in 1975 the minimum wage was $2.00 per hour, and in 1981 the minimum wage was $3.35 per hour. In Table 5, the minimum wage for the years used in the study is shown, and minimum quarterly income used in this study for each year is shown.

Table 4
Trade and Industrial Programs
Cost Per FTE
(1975-76)

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost Per FTE	No. FTE
Brevard CC	522.30	244.20	614.70	1,381.20	1,750.6
Central Florida CC	481.20	217.20	569.10	1,267.50	707.2
Chipola JC	535.50	214.80	729.60	1,479.90	384.3
Daytona Beach CC	566.10	373.20	511.80	1,451.10	1,047.6
Fla. JC at Jax.	351.60	245.40	624.90	1,221.90	2,732.9
Florida Keys CC	628.80	.00	1,034.70	1,663.50	2.1
Hillsborough CC	371.70	286.50	757.80	1,415.70	65.9
Indian River CC	384.00	155.70	827.40	1,367.10	461.0
Lake City CC	507.00	138.60	577.80	1,223.40	647.8
Manatee JC	406.50	228.00	681.90	1,316.40	165.1
Miami-Dade CC	816.00	130.50	787.50	1,734.00	519.0
North Florida JC	620.10	475.20	798.90	1,894.20	114.4
Okaloosa-Walton JC	430.20	150.60	681.90	1,262.70	301.2

Table 4--continued

College	Instructional Costs	Related Instructional Costs	Administrative Costs	Total Cost Per FTE	No. FTE
Palm Beach JC	238.80	50.10	609.30	898.20	134.0
Pasco-Hernando CC	297.60	12.30	905.40	1,215.30	158.3
Pensacola JC	589.50	271.80	649.50	1,510.80	532.0
Polk CC	649.80	138.00	619.20	1,407.00	296.8
Santa Fe CC	768.00	339.60	651.30	1,758.90	583.4
Seminole JC	707.70	632.40	551.40	1,891.50	365.0
South Florida JC	459.60	84.30	653.40	1,197.30	226.5
Valencia CC	410.70	326.40	695.10	1,432.20	439.1

Source: Based on State Division of Community Colleges data. The numbers were rounded to the nearest dollar.

Table 5
Minimum Hourly Wage and
Quarterly Income by Year

Year	Minimum Hourly Income	Minimum Quarterly Income
1975	2.00	$ 1,040.00
1976	2.20	1,144.00
1977	2.30	1,196.00
1978	2.30	1,196.00

A total of 301 graduates was included in the study. Of these, the number that had income reported varied for each quarter. For example, in the fourth quarter of 1975 only 113 graduates were reported as being employed and 38 had earnings above the minimum wage, while in the first quarter of 1978, 184 of the 301 were reported as being employed and 119 were earning more than the minimum wage according to the Department of Commerce data. The percentage of employed graduates earning more than the minimum wage increased from 33.6% in the fourth quarter of 1975 to 64.7% in the first quarter of 1978. Table 6 shows the employment statistics for each quarter used in the study.

Table 6
Employment Statistics by Quarter

Quarters Yr.-Qtr.	Number Reported as Employed	Number Reported above Minimum Wage	Percent Reported above Minimum Wage	Number Reported as not Employed
75 4	113	38	33.6%	188
76 1	127	39	30.7%	174
76 4	107	33	30.8%	194
77 1	164	62	37.8%	137
77 4	185	112	60.5%	116
78 1	184	119	64.7%	117

Income to the State and Local Governments

The third step in the model was to determine the amount of taxes paid from income earned above the minimum wage.

Income to the state was in the form of taxes. According to the Florida Department of Education the percentage of state and local government taxes paid by each citizen was eleven (11) cents out of each dollar earned (1977, p. 17). That meant that a person earning the minimum wage in 1975 of $1,040.00 during one quarter paid $114.40 in state and local taxes from those earnings. However, for the purposes of this study, the concern was the amount of income earned above the minimum wage. Therefore, for the remainder of this part of the study the focus was the income earned above the minimum wage.

Wages Earned Above Minimum Wage

In Table 6 it was indicated that in the quarter 75-4, 38 graduates earned more than the minimum wage. That meant that each of those 38 graduates earned more than $1,040.00 for each quarter. The amounts earned above the minimum ranged from $34.00 to $3,844.00. The total amount those graduates earned above the minimum wage was $34,959.00 which meant that they averaged $920.00 per graduate.

In quarter 78-1 (the last quarter) 119 graduates earned more than the minimum wage. The excess above the minimum wage of $1,196.00 ranged from $9.00 to $4,654.00. Collectively, they earned $95,974.00 above the minimum wage. The average earnings above the minimum wage during that quarter was $806.50.

Table 7 depicts the earnings above the minimum wage by quarter.

Table 7
Earnings Above Minimum
Wage by Quarter

Quarter Yr.-Qtr.	Earnings Above Number Earning Above Min. Wage	Collective Amt. Earned Above Minimum Wage	Average Amt. Earned Above Minimum Wage
75 4	38	$ 34,959.00	$ 920.00
76 1	39	24,488.00	628.00
76 4	33	34,320.00	1,040.00
77 1	62	46,740.00	754.00
77 4	112	83,814.00	748.00
78 1	119	95,974.00	807.00

The collective earnings for those graduates above the minimum wage did not increase significantly after the first quarter (75-4) until the fourth quarter (77-1) when the increase was almost $12,000. The fifth quarter collective earnings above minimum wage showed an increase of more than double the first quarter, and in fact, it was almost twice the collective earnings of the fourth quarter shown. Average earnings above the minimum wage fluctuated from quarter to quarter and, of course, that was the figure used to extrapolate the taxes to be paid to the state and local governments.

Estimation of Taxes Paid

It was stated earlier that the Florida Department of Education estimates that eleven (11) cents (11%) from each dollar earned in Florida is paid in state and local taxes (1977, p. 17). One way of determining the amount of new or additional tax each person would pay is to calculate the tax by person and figure that tax for a number of years. Similar results are obtained by averaging the income earned above the minimum wage and figuring 11% of that amount. Therefore, the taxes paid using the average income over the minimum wage indicated in Table 7 would be:

1. For quarter 75-4 on an average income of $920, taxes of $101.20 per graduate
2. For quarter 76-1 on an average income of $628, taxes of $69.08 per graduate
3. For quarter 76-4 on an average income of $1,040, taxes of $114.40 per graduate

4. For quarter 77-1 on an average income of $754, taxes of $82.94 per graduate

5. For quarter 77-4 on an average income of $748, taxes of $82.28 per graduate

6. For quarter 78-1 on an average income of $807, taxes of $88.77 per graduate.

The number of graduates reported as being employed did not exceed the number reported as either missing or unemployed until the 77-1 quarter. The Department of Commerce did not give any reasons for non-employment; they simply reported the data on income as missing. There were numerous reasons that the students may not have been employed. For example, the students may have continued their education, they may have not applied for any job, they may not have intended to become employed after receiving the training, or they may have been a homemaker.

With the exception of one quarter (76-4) the number of graduates reported as being employed increased each quarter. Likewise, the number reported as exceeding the minimum wage increased each quarter except for one (also 76-4). On the other hand, the percentage of those who were reported as exceeding the minimum wage did not substantially increase from the first reported quarter (75-4) until the fifth reported quarter (77-4) which was two years later. It was in the fourth quarter (77-1) some fifteen (15) months after the beginning of the first reported period before more than one-half (½) of the graduates were reported as being employed. The fact that it was 15 months before more than one-half (½)

of the graduates were employed seemed to be supportive evidence to a requirement for institutions to follow-up their students for at least two (2) years.

Projection of Taxes Paid

The last step in developing the model was to project the taxes paid over a period of years.

All of the funds earned above the minimum wage were totaled and all of those workers earning more than the minimum wage were totaled. The amount earned above the minimum wage was $320,295, and the total duplicated workers earning that amount was 403. Over the three year period of the reported income those workers averaged $795 above the minimum wage. Taking 11% of $795, the taxes paid above those paid by persons earning the minimum wage would be $87.45 per quarter or approximately $350 per year.

In Chapter I, it was assumed that each worker would have a five percent (5%) increase in earnings each year. The table that follows shows taxes and cumulative taxes paid by year for 30 years.

The important item was to discover at what point the public funds spent to pay for a student's education would be recovered through taxes. Trade and Industrial Program graduates would repay all funds once they reach the repayment of $2,772.36 and Health Related Program graduates after they reach $3,951.70. Trade and industrial students would reach that point in the 20th year and health related graduates in the 25th year.

Table 8
Taxes and Cumulative
Taxes by Year

Years	Income above Minimum Wage 5% Increase	Taxes Paid	Cumulative Taxes
1	$ 795.00	$ 87.45	$ 87.45
2	834.75	91.83	179.28
3	876.49	96.42	275.70
4	920.32	101.24	376.94
5	966.34	106.30	483.24
6	1,014.66	111.62	594.86
7	1,065.40	117.20	712.06
8	1,118.67	123.06	835.12
9	1,174.61	129.21	964.33
10	1,233.34	135.67	1,100.00
11	1,295.01	142.46	1,242.46
12	1,359.76	149.58	1,392.04
13	1,427.75	157.06	1,549.10
14	1,499.14	164.91	1,714.01
15	1,574.10	173.16	1,887.17
16	1,652.81	181.81	2,068.98
17	1,735.45	190.90	2,259.88
18	1,822.23	200.45	2,460.33
19	1,913.35	210.47	2,670.80
20	2,009.02	221.00	2,891.80
21	2,109.48	232.05	3,123.85
22	2,214.96	243.65	3,367.50
23	2,325.71	255.83	3,623.33

Table 8--continued

Years	Income above Minimum Wage 5% Increase	Taxes Paid	Cumulative Taxes
24	$ 2,442.00	$ 268.62	$ 3,891.95
25	2,564.10	282.06	4,174.01
26	2,692.31	296.16	4,470.17
27	2,826.93	310.97	4,781.14
28	2,968.28	326.51	5,107.65
29	3,116.70	342.84	5,450.49
30	3,272.54	359.98	5,810.47

The projections were made on a straight line using 5% increase in earnings. Many workers may in fact receive more than 5% and others may change to better paying jobs that would increase their pay more than 5%. The amount of taxes paid may also vary as a worker's income increases. As income increases, so does the living style. Persons may be more likely to buy a new house or car which may increase the property tax as well as the amount of sales tax paid.

It also must be taken into consideration that most graduates would be a part of the labor force for much more than 20 or 25 years. All of the taxes in excess after that period would be extra income earned by government, and therefore, bring greater returns on the investment. Of course, as a person's educational level and income increase, so do the benefits to society.

CHAPTER IV
SUMMARY AND RECOMMENDATIONS

Summary

In this study an attempt was made to develop a model for determining the cost benefit ratio of two vocational programs. The broad parameters for the study were established as well as the assumptions, limitations and delimitations. The study was particularly timely considering the economic conditions and all of the concern for the lack of funds available for service type functions such as education.

There were four major steps in the development of the model. The first was determining the cost of education to the state for each student. The second was developing the income of students above the minimum wage which was used instead of a control group. Determining the amount of taxes paid on the income above the minimum wage was the third step. The last step was projecting those taxes over a period of years in order to determine at what point the funds spent by the state would be repaid to it. Figure 1 represents the model developed in this research and directions for its use.

The study showed that fifteen (15) months after graduation, 65% of the graduates who were working were earning more than the minimum wage. As a result, they paid more taxes toward the repayment of the state's investment in their education.

Figure 1
Model for Cost-Benefit Analysis

1. Develop the program costs from data provided by the State Division of Community Coleges.
   a. Compute the average program costs per student by dividing the total program costs by the total program FTE.
   b. Obtain total program costs for two years by multiplying the yearly program costs by two.
2. Determine the average quarterly income earned by program completers by obtaining quarterly income data for the occupations.
   a. Calculate the average quarterly earnings of program completers who earned above the minimum wage.
   b. Convert quarterly earnings to yearly earnings by multiplying by four.
3. Calculate the average yearly tax paid by program completers who are earning above the minimum wage rate.
   a. Subtract the average yearly minimum wage from the average yearly wage of program completers to obtain the increase in the average yearly salary earned by those with more training.
   b. Multiply the increased average yearly salary by a selected anticipated percentage of increase paid in taxes (in this case 11%) to obtain increase in average yearly tax.

Figure 1--continued

4. Project the break even level.

   a. Calculate the increased average yearly salary for 30 years by multiplying the increased average yearly salary by an anticipated percentage increase factor (in this study 5% was used) each year.

   b. For each year multiply each yearly increased salary by the selected anticipated percentage of increase paid in taxes (in this case 11%) to obtain the taxes paid for each year.

   c. Accumulate the taxes paid for each year by year to identify the year where the accumulated taxes exceed the program costs per student.

The actual income of the graduates was used in the study, but minimum wage at the time of those incomes was used as the control.

Income was taken from different quarterly periods of the year in an effort to encompass any work that may have been seasonal in nature as well as to include the various dates during which raises in salary might occur. The income periods were also scattered over three years which allowed a maximum number of graduates to become employed.

The incomes used were limited by the fact that only those employers who paid social security for their employees were included. It may not have included self-employed persons and did not include those who may have been employed in another state. The income used was wages only and did not include other income such as investments.

The costs included those reported to the State Division of Community Colleges and those costs did not separate what portion was state funded and what portion was paid tuition. Therefore, the entire cost per FTE was considered to be the state's share. The programs that were included were both high cost programs. Of course, there are other programs that cost more, but there are many more that cost less.

The study itself was based on a cost-benefit analysis model; and therefore, the most important two components were the cost of the education and the benefit derived from it (income). This cost-benefit analysis differed from most others in that most of those in the past were concerned

about the benefit to the student as a result of attaining the education. This study was concerned about the benefit to the state from its investment in students.

There should not be the concern over the value of education that prevails. One of the most important functions of government is to help develop resources to the benefit of all of the people. If funds are spent to develop natural resources that are needed by society, then why not use them to develop all resources that are valuable? There are no resources any more valuable than people, hence no arguments of support should be necessary.

This study demonstrated that it takes approximately 20 years for the trade and industrial students to repay funds spent for their education. For health related students, it took 25 years. The period of time is a maximum because other sources of income are not included. To some this might seem to be a long period of time; however, a 20 or 30 year mortgage on a home is not considered a long time. When taken into consideration that the graduates probably average less than 30 years of age, they would all repay the funds and continue to pay taxes for another 20 or more years. Using these estimates, the public investment was justified purely on the basis of economic benefit.

The point was made earlier that the benefits from education could not all be quantified. There may be some benefits to society that could never be identified.

The reader should remember that society benefits from educated people by reduction in crime. Educated people commit fewer crimes or are found guilty of fewer crimes than less educated people. The great majority of people in prison in Florida have less than a high school education. The educated persons are not only less likely to be involved in crime, but so are their children. Likewise, their children are more likely to seek education beyond secondary school.

The educated person may also enjoy the process of being educated, and therefore, gain a higher degree of self-respect. In other words, the person may become a better person through the consumptive values that make him more rounded in the knowledge possessed. Society benefits from educated citizens participating more in public affairs. Last, the educated person benefits from the satisfaction of being successful in the chosen vocation. Educated people reduce their dependence on welfare or social service, therefore, freeing tax dollars for other purposes. The educated person is a tax payer rather than a tax user.

In this country, it is particularly important that a well educated populace prevail. The government is built on the sound judgement of its people to choose qualified representatives. It requires that persons be able to understand the issues and make decisions that have a rational basis.

The day is rapidly coming when justification must be given for developing the mind of our young children. The

tools needed to justify education will need to be in dollars and cents, therefore, some economically supportable rationale for the costs of education must be devised. Cost-benefit analysis is not the only answer, but it surely was a good place to start.

Recommendations

This study was simply designed to attempt to provide a model to make a cost-benefit analysis of educational programs. It was not intended to answer all questions and leaves a great deal to be uncovered.

It is recommended that further study in this area include a more realistic control group made up of actual people in the work force who earn what the pay is for the work performed. Additionally, it is recommended that the study make some allowance for taxes not paid during the year or years it took the student to complete the program and the future income should be discounted to allow for the decreasing value of the dollar.

Further study should include graduates from many different programs and compare those graduates with people working in a similar field without post-secondary education. This study might also include the amount of federal taxes paid since income tax is progressive and increases as income increases.

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BIOGRAPHICAL SKETCH

Robert W. Judson, Jr. was born August 21, 1941, in Miami, Florida. His family moved to Pompano Beach, Florida, when he was in elementary school and he remained there throughout his public school education.

He began his college education at Florida A & M University in 1960, but that education was interrupted by a tour of duty in the military service. He returned to college in 1966 and received his B.S. degree in 1969. He completed his M.Ed. degree in 1972.

From January 1970 until June 1972, he was a classroom teacher at Apalachee Correctional Institution in Sneads, Florida. In July of 1972, he was employed as a counselor at Pasco-Hernando Community College (P-HCC). He has held many different positions during the past ten (10) years at P-HCC including the one mentioned above, Coordinator of Financial Aid, Associate Director for Administrative Services, Associate Dean, and Dean.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

James L. Wattenbarger, Chairman
Professor of Educational
Administration and Supervision

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

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Associate Professor of Educational
Administration and Supervision

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

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This dissertation was submitted to the Graduate Faculty of the Department of Educational Administration and Supervision in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Education.

August, 1982

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